

did not warrant. Even in drug-resistant cases a satisfactory result could be obtained with milder forms of induced pyrexia.

Dr. Harkness, in view of the remarks made by one speaker, reiterated that he still had to see a case in which chemotherapy failed after a course of T.A.B. vaccine injections. He considered that the time factor in these cases was very important and he did not think that fever should be induced before at least three weeks had elapsed.

THE NURSING ASPECT OF HYPERTHERMY TREATMENT

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Patients selected for hyperthermy treatment are admitted to the special ward two days beforehand and are given a diet rich in protein, receiving the last meal at tea-time of the day before treatment. A cleansing enema is given the same evening. To those who are not sensitive to sulphonamide drugs, tablets of sulphathiazole or sulphadiazine are given in doses of two grammes at 4 p.m., 8 p.m., 12 midnight and 4 a.m., during the sixteen hours preceding treatment, the total dosage being therefore eight grammes.

Course of treatment

The working day in the Hyperthermy Department begins at approximately 7.20 a.m. The cabinets which have been preheated by the night staff are ready for use. The patient arrives at this time and while he undresses, the trolleys are prepared with the requirements of the day. Wearing a towel as a girdle, the patient is weighed; the rectal temperature, pulse, respirations and blood pressure are carefully taken and recorded. Dentures, rings and identity discs are removed and a careful scrutiny of the patient is made for any unfavourable signs, such as drug rashes, which might be a contra-indication to the proposed treatment. The cabinet, which should register a temperature of 120° F. to 124° F., is now opened and the patient is placed inside. His head, which projects through an aperture at one end of the cabinet, is made comfortable on one or more pillows; a towel is adjusted around the neck to prevent leakage of cabinet heat. The towel worn by the patient as a girdle lies loosely across the groins or may be removed altogether. The rectal thermometer which is connected to the Cambridge indicator is inserted into the anal canal.

Induction of fever.—The period of elevation of temperature which continues until the height of the fever (106° F.) is reached, usually takes from sixty to seventy minutes. A shorter induction period places a considerable strain on the patient's circulatory system and is therefore avoided. During induction the cabinet temperature should be limited to 116° F. and it is often necessary to dial down the cabinet switch control in order to obtain this level. From the beginning of the treatment the patient is encouraged to drink 200 cubic centimetres of 0.6 per cent solution of sodium chloride in water every fifteen minutes throughout the induction period. Afterwards a similar amount may be given every thirty minutes until a total of four litres of the fluid has been taken. If nausea occurs 0.3 per cent solution of sodium chloride is substituted, usually with good effect. An occasional drink of plain water may be given. To every patient without exception a mixture of oxygen, 93 per cent, and carbon dioxide, 7 per cent, is administered through a B.L.B. oro-nasal or nasal mask at the rate of nine litres each minute throughout the whole of the induction period.

The rectal temperature is carefully observed; the readings recorded on the indicator are frequently counterchecked by the additional insertion of a mercury thermometer. Temperature readings are charted at intervals of fifteen minutes during the periods of induction, maintenance and fall of the fever. Discomfort and slight restlessness are almost invariably experienced when the body temperature runs between 101° F. and 103° F. By this time the patient is perspiring pro-

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fusely; the head, face and neck need constant mopping with a dry towel; the pillows soon became saturated and should be changed frequently. The pulse rate, which rises coincidentally with the body temperature, is a certain indication of the general condition and is taken frequently at the superficial temporal artery. The rate and quality are recorded at intervals of fifteen minutes throughout. When the body temperature approaches the required level the cabinet temperature is lowered by dialling down the cabinet control. It is found that the resultant diminution of heat is sufficient to maintain the height desired.

A placid uneventful induction period usually foretells a calm successful treatment session; it is at this stage, the most trying period of the whole day, that much can be done for the comfort of the patient by the nurse. Each patient has individual reactions which require individual management and in this psychotherapy plays a large part. The greater number of patients experience apprehension and nervousness and a few may become hysterical; encouragement and reassurance from an understanding sympathetic nurse will usually allay these fears and win that complete cooperation which is so necessary for successful treatment.

Maintenance of fever.—Ordinarily the height of the fever is reached by 9 a.m. and this marks the beginning of the eight hours' maintenance period. A fan attached to the end of the cabinet is now allowed to play on the patient's head, the effect being to increase comfort without noticeably lowering the temperature. The blood pressure is recorded and is usually found to be raised at this stage. A hypodermic injection of alopon, $\frac{1}{4}$ grain, is given as a sedative and this is repeated after four hours. The cabinet temperature is now regulated in accordance with the patient's body temperature and it is possible to have a cabinet temperature reading from 2° F. to 3° F. lower than that of the patient for several hours. This disparity varies considerably with atmospheric conditions and the heat of the room; also, patients show individual variation in the amount of cabinet heat required to maintain their temperature. As the body temperature becomes stabilized the general physiological condition adapts itself to the circumstances. The pulse settles and 120 beats per minute is found to be an average reading; the respiration rate too is much slower. At this point or later the B.L.B. mask may be replaced by a nasal catheter through which pure oxygen, warmed and humidified, is given at the rate of five litres per minute.

The patient at this stage feels comparatively comfortable and it is advisable to disturb him as little as possible apart from the ordinary nursing attention; this includes giving of fluids and provision of a urinal when required, taking the blood pressure readings hourly, changing a damp pillow and occasionally adjusting the position. Absolute quiet is essential. The room is darkened for those who wish it and patients may sleep for long periods. Some patients choose to converse at great length, especially if they are worried and perturbed or they may enjoy listening to the radio programmes. Others are fractious throughout the treatment and require considerable patience from the nurse in charge. It is noticed that almost without exception there is an extremely restless period when the treatment is half completed, usually after four maintenance hours have elapsed. The second dose of alopon, $\frac{1}{4}$ grain, is then given and it can be anticipated that a treatment uneventful up to this point will terminate uneventfully. When necessary, restless patients are given a third similar dose of alopon, but the use of sedatives is strictly controlled by the medical officer in charge of the department. During the whole of the hyperthermy period the nurse must be alert and must not relax in her observation of the patient. With careful management the cabinet heat can be so controlled that the body temperature never rises above the required level nor drops below 105.8° F. If a rise of temperature occurs the side doors of the cabinet are opened to allow hot air to pass out. If the temperature does not fall readily the body is sprinkled with warm water and an electric fan is brought into play. A fluctuating temperature always means a restless patient, whereas absence of variations of body and cabinet temperatures will result in a fit patient at the end of the day.

Complications of hyperthermy.—Complications are not frequent, but may occur during the induction period or later. They can be recognized early by a good nurse and must be reported immediately. Every complaint must be investigated. Tingling, numbness or stiffness in the distal parts of the limbs suggests early tetany. For this condition a mixture of oxygen and carbon dioxide is administered or 10 cubic centimetres of calcium gluconate in a 10 per cent solution may be given intravenously, usually with satisfactory relief. If the pulse rate rises to 160 beats per minute or is weak or variable in volume, an intravenous infusion of 1000-1500 cubic centimetres is given. If vomiting occurs and persists, oral fluids are discontinued and an intravenous infusion is given, the amount depending upon the severity of the symptoms. An intravenous infusion is also indicated when the systolic blood pressure falls below 100 millimetres of mercury and does not recover with the administration of oxygen and carbon dioxide, and also when the patient has failed to take three litres of fluid by mouth. The nurse must be able to detect the difference between a patient who is asleep and one who is drowsy and unresponsive. Failure to respond is an indication to stop treatment. Marked restlessness during the maintenance period may indicate abdominal distension and the patient should then be encouraged to lie on his side with his knees flexed to aid the eructation of gas. Delirium is sometimes an aftermath of one of the previously mentioned complications and if a patient does not respond to the administration of oxygen and carbon dioxide and becomes unmanageable the fever treatment must be terminated. Drowsiness, a rapid soft pulse and a low blood pressure are regarded as contra-indications to the giving of sedatives.

The recovery period.—The prescribed period for maintenance of fever is usually eight hours and is completed at approximately 5 p.m. The cabinet control is then switched off and the lid opened. The flannelette blanket on which the patient is lying is now replaced by a dry one by the rolling process gently carried out. The groins are covered by a dry towel. The electric fan is directed to play upon the patient's body, the blood pressure is taken, and as a routine measure oxygen and carbon dioxide is administered through a B.L.B. mask for one hour continuously to all patients. This marks the beginning of the period of the fall of temperature which lasts approximately one hour, during which the temperature and the pulse rate continue to be recorded carefully every fifteen minutes as during the treatment. The patient relaxes almost immediately and when the temperature is approximately 103° F. he is given a warm blanket bath. As soon as the temperature has fallen to 101° F. he is carried to his own bed where the blood pressure reading is again recorded; if this is satisfactory pure oxygen is administered through the B.L.B. mask for another thirty minutes. Low blood pressure is an indication for further administration of oxygen and carbon dioxide.

After-treatment

The after-treatment of hyperthermy cases is as important as the actual treatment and for the first few hours is carried out by one of the hypertherm nursing staff who is well acquainted with the patients and with the happenings of the day and who can foresee any eventuality. It is at this stage that respiratory and cardiac reactions are likely to occur. The patient usually feels well, is moderately tired, and may sleep for several hours. Slight vomiting and nausea may occur. Alterations for which particular observation should be kept are cyanosis, respiratory distress, an irregular pulse, rapid or poor in quality, and a rise in temperature. Anything unusual should be reported immediately to the medical officer. In a normal case the temperature, pulse, respirations and blood pressure are recorded hourly until a rectal temperature of 100° F. and a systolic blood pressure recording over 100 millimetres of mercury for two or three successive readings are obtained. Sips of water are given and the patient is returned to the ward at approximately 10 p.m. Usually the administration of oxygen and carbon dioxide is all that is required at this stage. An intravenous infusion is however kept ready for immediate use at all times and may be given for persistent vomiting, low blood pressure, irregular or poor pulse and any sign of collapse. A full fever treatment takes rather

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more than ten hours but apart from the monotony of the eight hours of maintenance the average patient does not complain. Patients ill with arthritis need to be nursed very carefully but derive immediate relief from the warmth of the cabinet. They are particularly comfortable during treatment and in most cases this could continue for many more hours. Women are admirable patients, and age does not seem to contra-indicate the treatment. It is arranged that the entire treatment of any patient is carried out by the same nurse who is relieved for short periods only for meals. A patient is never left alone for one moment during the whole course of the treatment nor for several hours afterwards.

Essentials of nursing

It will be seen that the nursing hours are long and that the work is arduous. This branch of nursing although limited in scope is extremely interesting and needs the qualities of placidity, good temper and conscientiousness in the nurse. A medical officer although not present continuously throughout treatment remains within call both day and night and the nursing staff can always communicate with him for immediate advice and instruction.

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VENEREAL DISEASE IN PEPYS'S DIARY *

By J. D. ROLLESTON, M.D., F.R.C.P., F.S.A.

The medical aspects of Pepys's *Diary* have been discussed by many writers within the last fifty years, as a glance at the second and third series of the Surgeon-General's Catalogue (S. V. Pepys) will show. Considerable attention has been given to the subject by the late Sir D'Arcy Poyer, who has specially dealt with Pepys's ocular and urinary troubles, as well as with his minor illnesses and his wife's ailments. Other medical articles on Pepys are those by Sir William MacArthur, Mr. R. R. James, Dr. C. MacLaurin and Mr. William Jones. No work, however, to my knowledge, has been devoted to the mention of venereal diseases in the *Diary*.

As I have recently dealt with the occurrence of syphilis among the courtiers of Louis XIV and the Regency as described by Saint-Simon's *Mémoires* which covered the period 1693-1723, it occurred to me that I might make a similar study of Pepys's *Diary* which was ranged with the years 1659-69.

The lack of any previous article on the subject seems to be owing to the fact that until the publication of H. B. Wheatley's edition (1893-9) the *Diary* underwent extensive expurgation before it appeared, all the passages relating to venereal disease being suppressed. The *Diary* has gone through six successive editions, the first four under the supervision of Lord Braybrooke being published in 1825, 1828, 1848-9 and 1854 and the fifth being edited by Wheatley. In the first edition barely half of Pepys's manuscript was printed, but as the result of protests more passages were added to each of the subsequent editions. Wheatley's edition, which first appeared in 1893-9, although containing a large proportion of the passages suppressed by Braybrooke, still had a number of omissions which Wheatley declared "could not possibly be printed." Wheatley, however, unlike Braybrooke, whenever a passage was suppressed, inserted marks of omission, so that, as he says, "in all cases readers will know where anything has been left out." In the capacity of *chercheur et curieux* I have counted up the omissions in the Wheatley edition, and found that they amount to eighty-four. Fifty-five of these, judging from the context, are erotic in character or deal with venereal disease, twenty-two are concerned with non-erotic urinary troubles, and seven give no indication of the cause of the omission.

* The edition of the *Diary* quoted in this paper is that edited by H. B. Wheatley in 8 volumes, 1919.